UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,633	09/25/2006	Steinar Bjornstad	OSL-038	6061

3897 7590 06/22/2010

SCHNECK & SCHNECK
P.O. BOX 2-E
SAN JOSE, CA 95109-0005

EXAMINER	
AGA, SORI A	
ART UNIT	**PAPER NUMBER**
2476	
MAIL DATE	**DELIVERY MODE**
06/22/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,633	BJORNSTAD, STEINAR	
	Examiner	Art Unit	
	SORI A. AGA	2476	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 20* is/are rejected.

7)☒ Claim(s) *20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/17/2010 has been entered. With the submission applicant has amended claims 1 and 13, and cancelled claims 19 and 21. Claims 1-18 and 20 remain pending.

Claim Objections

2. Claim 20 is objected to because of the following informalities: amended claim 20 depends on cancelled claim 19. For examination purposes, examiner reads claim 19 as depending on claim 13 from which cancelled claim 19 depended before it was cancelled. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 5, 6, 8-10, 13-15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guild et al. (US 2004/0037561 A1) (herein after Guild) and Ge et al (US 6,819,870 B1) (herein after Ge).

Regarding claim 1, Guild teaches an optical switch within an asynchronous fiber optic communication network comprising, a plurality of fiber optic inputs, a plurality of fiber optic outputs having different wavelengths for wavelength division multiplexing **[see figure 2, paragraph 0022 lines 1-11 and 0010 lines 8-10 where a network edge switch of an optical packet switched network having input fibers 1-N and output fibers 1-N (a plurality of fiber optic inputs and a plurality of fiber optic outputs) and utilizes different wavelengths of a wavelength-division multiplexed optical signal – see also paragraph 0020 lines 2-7]**,

and a buffer unit communicating with the inputs and outputs, wherein the buffer unit has electronic delays that buffer data **[see paragraph 0022 and figure 2 where an electronic control layer-4 (buffer unit) is shown and controls each of the components of the packet switching device (i.e. communicates with the inputs and outputs). Note that since the electronic control layer controls all hardware, it then therefore is responsible for all delay, assignment of wavelength in the switch]** based upon reorganizing the data by assigning data packets according to length to different delay queues **[see paragraph 0020 lines 1-14 where a packet traffic consisting of a number of streams 1-n each having variable length packets are then re-organized so as to consist of a number of packet streams each having fixed-length packets]** and scheduling outputting of data when a predefined number, greater than one, of

wavelengths is directed to a buffered destination that is vacant **[see paragraph 0020 lines 14-17 where the re-organized packet streams are assigned (scheduling outputting of data) on to separate available (vacant) wavelengths $\tilde{1}$ $_n$ of the optical signal transmitted over the network. Note that 'n' is a number greater than one]**.

However, Guild does not explicitly teach data packets having shorter lengths have greater probability of encountering sufficient vacant outputs of different wavelength and data packets having longer lengths having lesser probability of encountering sufficient vacant outputs of different wavelength. However, Ge, in the same field of endeavor (optical switching) teaches incoming packet of an optical switch are sorted in ascending order based on the data packet size, wherein the shortest length data packet is processed first (i.e. the data packets having shorter lengths have greater probability of encountering vacant outputs of different wavelength)**[see column 5 lines 26-36 – see also column 8 lines 6-23]**. This is desirable because such optical switching system reduces dropping of variable length data packet due to blocking conflicts (see column 3 lines 34-37).

Regarding claim 2, Guild teaches the switch of claim 1 wherein the switch monitors to detect a number of vacant wavelengths at the switch outputs being greater than or equal to the predefined number **[see paragraph 0020 lines 14-17 where the re-organized packet streams are assigned on to separate available (vacant) wavelengths (i.e. the switch knows what wavelengths are available)]**.

Regarding claim 3, Guild teaches the switch of claim1, wherein the data and buffered packets are classified according to one of (a) packet data length and (b) length of non-packet data **[paragraph 0020 lines 1-14 where a packet traffic consisting of a number of streams each having variable length packets are then re-organized based on packet length]**.

Regarding claim 5, Guild teaches the switch of claim 1 wherein the buffer unit has inputs with data originating from lines external to the switch **[see figure 2 'inputs 1-n' and Paragraph 0020 where the inputs for the optical router are incoming (i.e. they are external)]**.

Regarding claim 6, Guild teaches the switch of claim 5 as discussed above. However, Guild does not explicitly teach the external lines are lines from aggregation inputs. However, Heinz teaches an Ethernet-Optical switch for use in a ring network at a metropolitan exchange **[see paragraph 0009 lines 14-20 and paragraph 0030 lines 27-29]**. It would have been obvious for a person having ordinary skill in the art use external lines that are lines from aggregation inputs, namely metro access rings. This is desirable because it allows for the provision of a system that can be used to improve the speed and reliability of data communications networks for small to medium sized companies in a metropolitan area networks.

Regarding claim 8, Guild teaches the switch of claim 1, where the switch is selected to operate within one of the following networks among the group consisting of an optical packet switched network, an optical bursts switched network, an electronic packet switched network, a WDM network, and an electronic bursts switched network **[see paragraph 0020 lines 7 where the network is shown to be optical packet switched network]**.

Regarding claim 9, Guild teaches the switch of claim 5, where the switch is an optical switching unit **[see figure 2 and paragraph 0022 line 18 where the switch is shown to be an optical packet switch]**.

Regarding claim 10, Guild teaches the switch according to claim 5, where the switch is an electronic switching unit **[see paragraph 0022 where the switch is controlled by an electronic control layer (electronic switching unit)]**.

Regarding claim 13, Guild teaches a method for organizing data flows in an asynchronous communication network including at least one switch, where said switch is associated with at least one buffer having fiber optic inputs and outputs with a plurality of data queues and at least a dataflow that can be divided into data packets, comprising: communicating dataflow to the buffer, and reorganizing the data by assigning data

packets according to length to different buffer queues and **[see figure 2, paragraph 0022 lines 1-11 and 0010 lines 8-10 where a network edge switch of an optical packet switched network having input fibers 1-N and output fibers 1-N (a plurality of fiber optic inputs and a plurality of fiber optic outputs) and utilizes different wavelengths of a wavelength-division multiplexed optical signal – see also paragraph 0020 lines 2-7; see paragraph 0022 and figure 2 where an electronic control layer-4 (buffer unit) is shown and controls each of the components of the packet switching device (i.e. communicates with the inputs and outputs). Note that since the electronic control layer controls all hardware, it then therefore is responsible for all delay, assignment of wavelength in the switch; and see paragraph 0020 lines 1-14 where a packet traffic consisting of a number of streams 1-n each having variable length packets are then re-organized so as to consist of a number of packet streams each having fixed-length packets];** scheduling outbound data from the buffer unit when a predefined number, being at least two, of wavelengths leading to a buffered output destination being monitored to be vacant **[see paragraph 0020 lines 14-17 where the re-organized packet streams are assigned (scheduling outputting of data) on to separate available (vacant) wavelengths $\tilde{1}$ n of the optical signal transmitted over the network. Note that 'n' is a number greater than one]**.

Regarding claim 14, Guild teaches the switch of claim 13 further defined by monitoring to schedule data from the buffer unit to an output of the switch upon a number of vacant wavelengths at the output of the switch being at least the predefined number **[see**

paragraph 0020 lines 14-17 where the re-organized packet streams are assigned on to separate available (vacant) N-wavelengths (i.e. the switch knows what wavelengths are available)].

Regarding claim 15, Guild teaches the method of claim 13 further defined by buffering data packets into a number of queues according to parameters of the data packets **[paragraph 0020 lines 1-14 where a packet traffic consisting of a number of streams each having variable length packets are then re-organized based on packet length (parameter of data packets)]**.

Regarding claim 20, Guild teaches the method of claim 13, wherein the method further comprises the predefined number of vacant wavelengths is specific to each queue **[see paragraphs 0020-0023; see also fig. 1 where Guild teaches associating a particular wavelength for a data stream of a particular packet length after reclassifying incoming packet according to their lengths].**

5. Claims 4 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guild and Ge as applied to claims 1-3, 5, 6, 8-10, 13-15 and 20 above, and further in view of Ohba (US 6,101,193) (herein after Ohba).

Regarding claim 4, Guild teaches the switch of claim 3 as discussed above. However, Guild does not explicitly teach at least one data packet with a length within a first range is associated with a first queue, a further data packet with a length within a second range is associated with a second queue, and a still further packet with a length within a third range is associated with a third queue. However, Ohba teaches **[see column 8 lines 66-67 and column 9 lines 1-11 where packets with packet lengths with less than or equal to 100 bytes (first range) are entered into the packet length designated queue A1 or B1; and where packets with packet lengths with less than or equal to 300 bytes and more than 100 bytes (second range) are entered into the packet length designated queue A2 or B2; and where packets with packet lengths with less than or equal to 500 bytes and more than 300 bytes (third range) are entered into the packet length designated queue A3 or B3].** It would have been obvious for a person having ordinary skill in the art to classify packets according to packet data length. This is desirable because it helps to make the network improve the fairness characteristics in a short time scale by suppressing the burstiness of traffic.

Regarding claim 16, Guild teaches the method of claim 13 as discussed above. However, Guild does not explicitly teach the method further comprises associating data packets with a length within a first range with a first queue. However, Ohba teaches **[see column 8 lines 66-67 and column 9 lines 1-2 where packets with packet lengths with less than or equal to 100 bytes (first range) are entered into the packet length designated queue A1 or B1]**. It would have been obvious for a person having ordinary skill in the art

to classify packets according to packet data length. This is desirable because it helps to make the network improve the fairness characteristics in a short time scale by suppressing the burstiness of traffic.

Regarding claim 17, Guild teaches the method of claim 13 as discussed above. However, Guild does not explicitly teach associating data packets with a length within a second range with a second queue. However, Ohba teaches **[see column 9 lines 2-6 where packets with packet lengths with less than or equal to 300 bytes and more than 100 bytes (second range) are entered into the packet length designated queue A2 or B2]**. It would have been obvious for a person having ordinary skill in the art to classify packets according to packet data length. This is desirable because it helps to make the network improve the fairness characteristics in a short time scale by suppressing the burstiness of traffic.

Regarding claim 18, Guild teaches the method of claim 13 as discussed above. However, Guild does not explicitly teach the method further comprises associating data packets with a length within a third range with a third queue. However, Ohba teaches **[see column 9 lines 6-10 where packets with packet lengths with less than or equal to 500 bytes and more than 300 bytes (third range) are entered into the packet length designated queue A3 or B3]**. It would have been obvious for a person having ordinary skill in the art to classify packets according to packet data length. This is desirable

because it helps to make the network improve the fairness characteristics in a short time scale by suppressing the burstiness of traffic.

6. Claims 7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guild and Ge as applied to claims 1-3, 5, 6, 8-10, 13-15 and 20 above, and further in view of Lee et al.(US 2004/0151171 A1) (herein after Lee).

Regarding claim 7, Guild teaches the switch of claim 1 as discussed above. However, Guild does not explicitly teach the buffer unit has an input and the data, at the buffer unit input is routed from a one or more switch inputs. However, Lee teaches buffer unit having input data from a switch **[see figure 2 'inputs 1-n' and Paragraph 0037 lines 3-6 and paragraph 0019 line 6 where the inputs for the optical router are incoming from an IP router (switch inputs) to an electric buffer]**. Using electric buffers in optical routers is desirable because it introduce additional efficiency in optical switching (see paragraph 0054).

Regarding claim 11, Guild teaches the switch of claim 7, where at least one of the output or input signals of the switch are WDM **[see paragraph 0010 where the outputs are Wavelength Division Multiplexed-WDM]**.

Regarding claim 12, Guild teaches the switch of claim 9 as discussed above. However, Guild does not explicitly teach electronic type of buffer. However, Lee teaches electric

type buffer **[see paragraph 0019 line 6 where the buffer is shown to be an electronic buffer]**. Electric buffers are desirable because they introduce additional efficiency in optical switching (see paragraph 0054).

Response to Arguments

7. Applicant's arguments with respect to claims 1-18 and 20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SORI A. AGA whose telephone number is (571)270-1868. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on (571)272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. A. A./
Examiner, Art Unit 2476

/Ayaz R. Sheikh/
Supervisory Patent Examiner, Art Unit 2476